WHAT IS CLAIMED IS:

1. A medical device for use within a body cavity, the medical device having a visualization region in which visualization using magnetic resonance imaging (MRI) is desired, the medical device comprising:

structural material defining a primary structure having a wall with openings therein and a periphery, the structural material being configured such that any closed path, in the visualization region, extending about at least one of the periphery or an opening in the wall, passes through at least two materials.

2. The medical device of claim 1 wherein the primary structure comprises a generally tubular structure which comprises:

a plurality of electrically conductive structural members; and

a plurality of bridges coupled to and forming electrical discontinuities in the plurality of electrically conductive structural members, the electrical discontinuities being sufficient to enable MRI visualization in the visualization region.

3. The medical device of claim 2 wherein the plurality of electrically conductive structural members

are arranged as a plurality of electrically conductive cells that define the openings in the wall.

4. The medical device of claim 3 wherein each of the plurality of conductive cells is coupled to at least one of the plurality of bridges such that any closed path defining the cell in the visualization region passes through the at least one bridge, inhibiting formation of an electrical loop in the visualization region.

5. The medical device of claim 4 wherein the plurality of electrically conductive structural members further include a plurality of electrically conductive connectors, with each of the plurality of connectors connecting at least two of the plurality of cells.

6. The medical device of claim 5 wherein each of the plurality of connectors is coupled to at least one of the plurality of bridges, thereby preventing an electrical loop being formed between two or more cells across at least one of the plurality of connectors.

7. The medical device of claim 2 wherein the plurality of bridges comprise a ceramic material.

8. The medical device of claim 2 wherein the plurality of bridges comprise a polymeric material.

9. The medical device of claim 2 wherein the plurality of bridges comprise an electrically non-conductive cement.

10. The medical device of claim 2 wherein the plurality of bridges comprise an electrically non-conductive adhesive.

11. The medical device of claim 2 wherein each of the plurality of electrically conductive structural members comprise a substantially low magnetic susceptibility material.

12. The medical device of claim 11 wherein the substantially low magnetic susceptibility material is at least one of platinum, iridium, tantalum, titanium, niobium, hafnium and gold.

13. The medical device of claim 2 and further comprising a coating of electrically insulating material covering at least portions of the plurality of electrically conductive structural members which are immediately adjacent to the bridges.

14. The medical device of claim 13 wherein the insulating material is a polymeric material.

15. The medical device of claim 13 wherein the insulating material is a ceramic material.

16. The medical device of claim 2 wherein the plurality of bridges are formed in portions of the medical device which exhibit lower tensile stress, when the medical device is extended, relative to other portions of the medical device.

17. The medical device of claim 2 wherein the plurality of electrically conductive structural members comprise a metal/ceramic/metal layered structure.

18. The medical device of claim 17 wherein the plurality of bridges comprise one or more slits formed in metal layers of the metal/ceramic/metal layered structure.

19. The medical device of claim 18 wherein the slits are not formed in the ceramic layer of the metal/ceramic/metal layered structure.

20. The medical device of claim 18 and further comprising an electrically isolating layer formed on the metal layers and in the slits.

21. The medical device of claim 18 wherein for each of the plurality of electrically conductive structural members, a slit formed in a first metal layer of the layered structure is spaced apart from a slit formed in a second metal layer of the layered structure, such

that at every position along a length of the electrically conductive structural member, the structural member includes the ceramic layer and at least one of the metal layers.

22. The medical device of claim 2 and further comprising a plurality of sleeves, with each of the plurality of sleeves positioned over one of the plurality of bridges and overlapping with adjacent portions of a corresponding electrically conductive structural member.

23. The medical device of claim 1 wherein the primary structure comprises a generally tubular structure comprising:

a plurality of hoop structures, each hoop structure having a section formed of a material which prevents the hoop structure from forming a closed electrical loop; and

a backbone structure connected to each of the plurality of hoop structures.

24. The medical device of claim 23 wherein the backbone structure is a single continuous backbone.

25. The medical device of claim 23 wherein the backbone structure includes a plurality of staggered backbone sections.

26. The medical device of claim 25 wherein the section of each hoop structure is oriented in a different direction than the section of an adjacent hoop structure.

27. The medical device of claim 1 wherein the primary structure further comprises:

a stent skeleton structure; and

a reinforcement structure embedded within the stent skeleton structure.

28. The medical device of claim 27 wherein the stent skeleton structure comprises at least one of carbon composite, crystalline graphite, and amorphous carbon.

29. The medical device of claim 27 wherein the reinforcement structure comprises at least one of tantalum and platinum.

30. A medical device for use within a body cavity, comprising:

a primary structure formed of a plurality of substructures, the substructures forming a wall of the primary structure and defining openings in the wall, the primary structure having a visualization region in which magnetic resonance imaging (MRI) visualization of the body cavity adjacent the visualization region is desired, the

substructures in the visualization region being formed with sufficiently low magnetic susceptibility material that the body cavity adjacent the visualization region can be seen using MRI.

31. The medical device of claim 30 wherein the medical device comprises a stent and wherein the substructures comprise connected cells.

32. The medical device of claim 31 wherein each of the cells in the visualization region has a portion thereof formed of the sufficiently low magnetic susceptibility material.

33. The medical device of claim 30 wherein the primary structure comprises a tubular structure.

34. The medical device of claim 31 wherein the substructures in the visualization region form a periphery about the tubular structure.

35. The medical device of claim 34 wherein the substructures defining the periphery of the tubular structure in the visualization region are formed with sufficiently low magnetic susceptibility material that the body cavity adjacent the visualization region can be seen using MRI.

36. A stent for use in a body cavity, comprising:

a primary structure formed of a plurality of substructures, the substructures forming a wall of the primary structure and defining openings in the wall, the primary structure having a visualization region in which magnetic resonance imaging (MRI) visualization of the body cavity adjacent the visualization region is desired, the substructures in the visualization region being formed with sufficiently low magnetic susceptibility material that the body cavity adjacent the visualization region can be seen using MRI.

37. The stent of claim 36 wherein the substructures comprise connected cells.

38. The stent of claim 37 wherein each of the cells in the visualization region has a portion thereof formed of the sufficiently low magnetic susceptibility material.

39. The stent of claim 36 wherein the primary structure comprises a tubular structure.

40. The stent of claim 39 wherein the substructures in the visualization region form a periphery about the tubular structure.

41. The stent of claim 40 wherein the substructures defining the periphery of the tubular structure in the visualization region are formed with sufficiently low magnetic susceptibility material that the body cavity adjacent the visualization region can be seen using MRI.